

April 11, 1944.

T. E. COTY

2,346,292

VALVE BAG

Filed Oct. 21, 1940

Fig. 4.

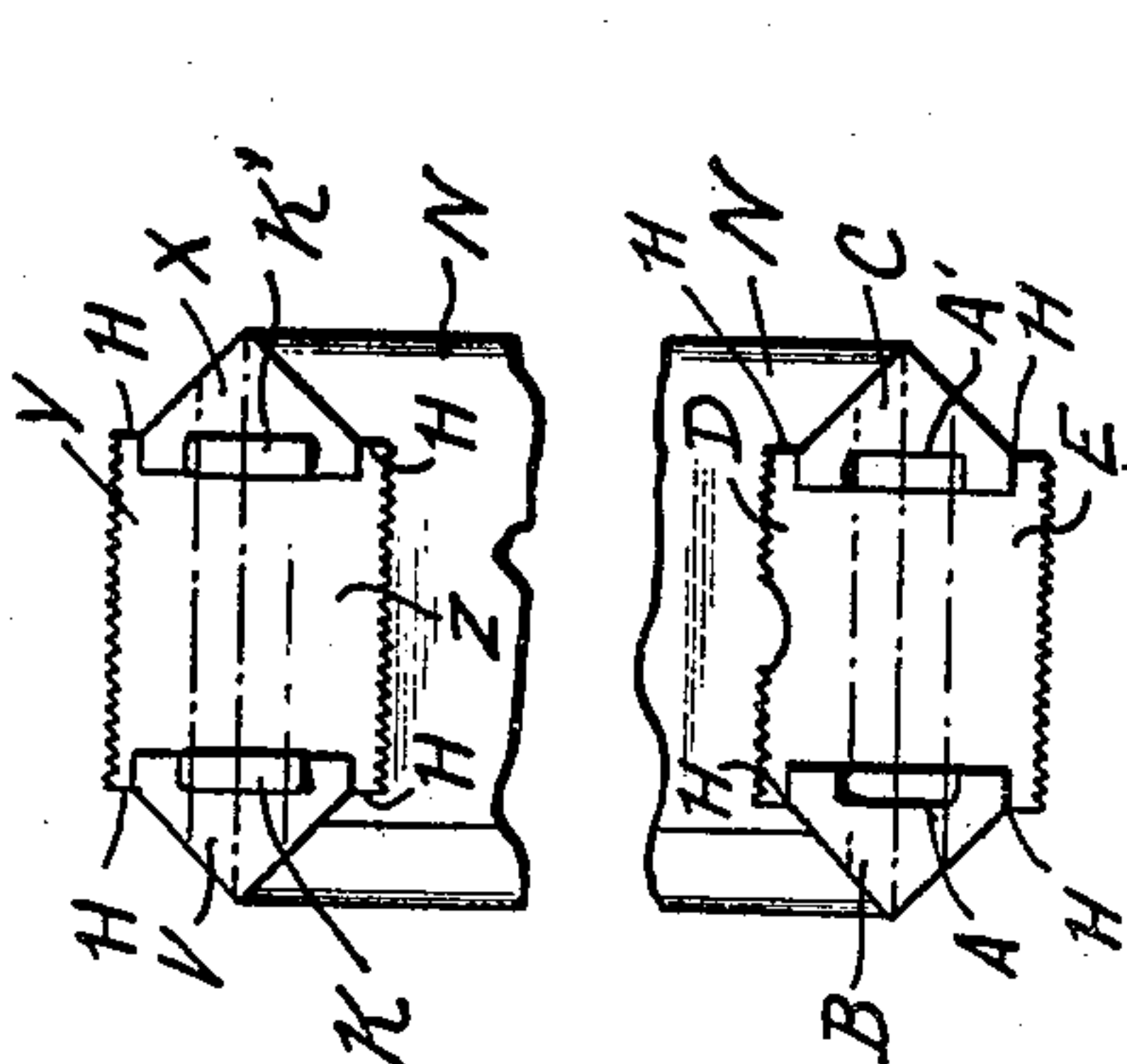


Fig. 3.

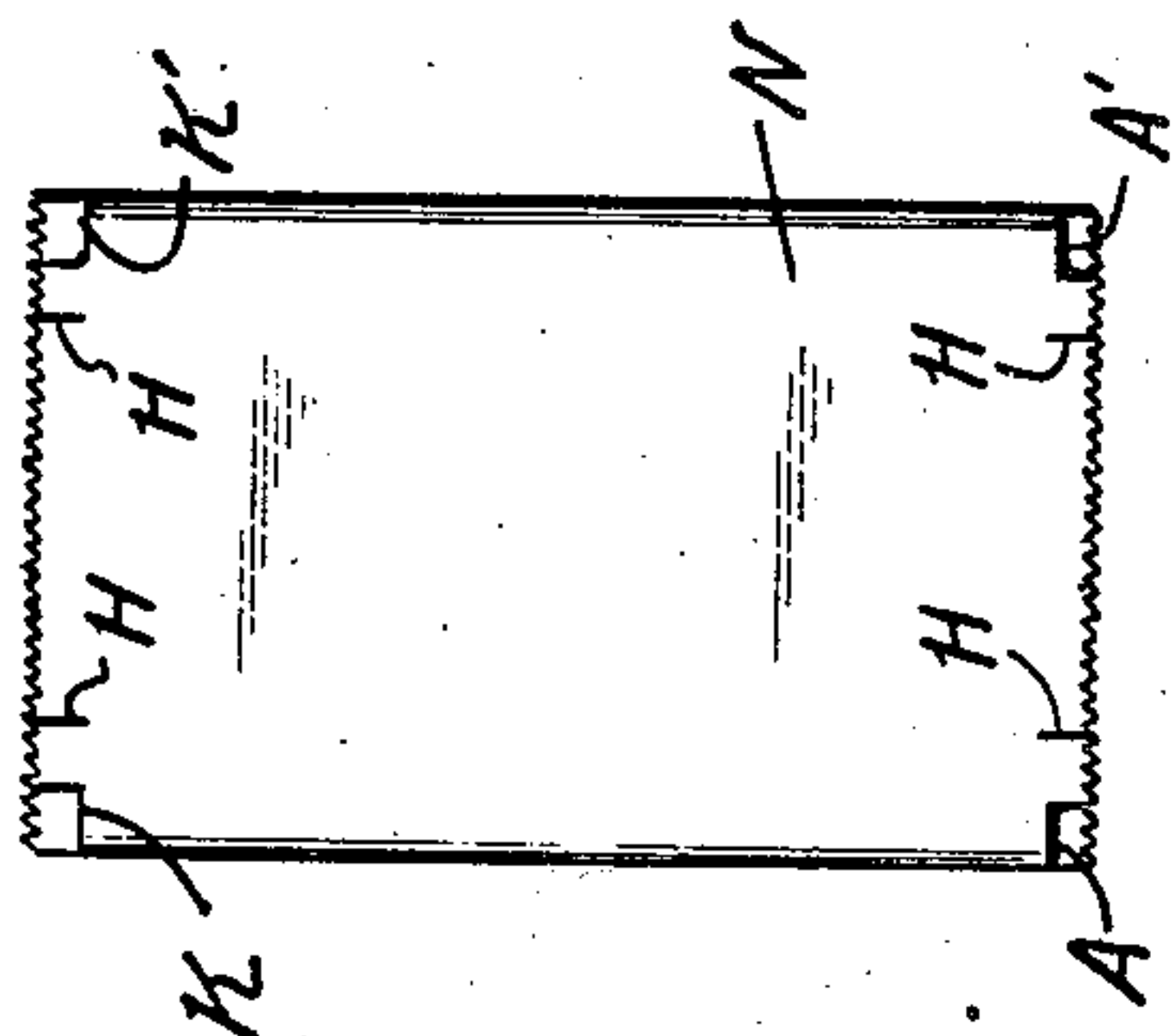


Fig. 2.

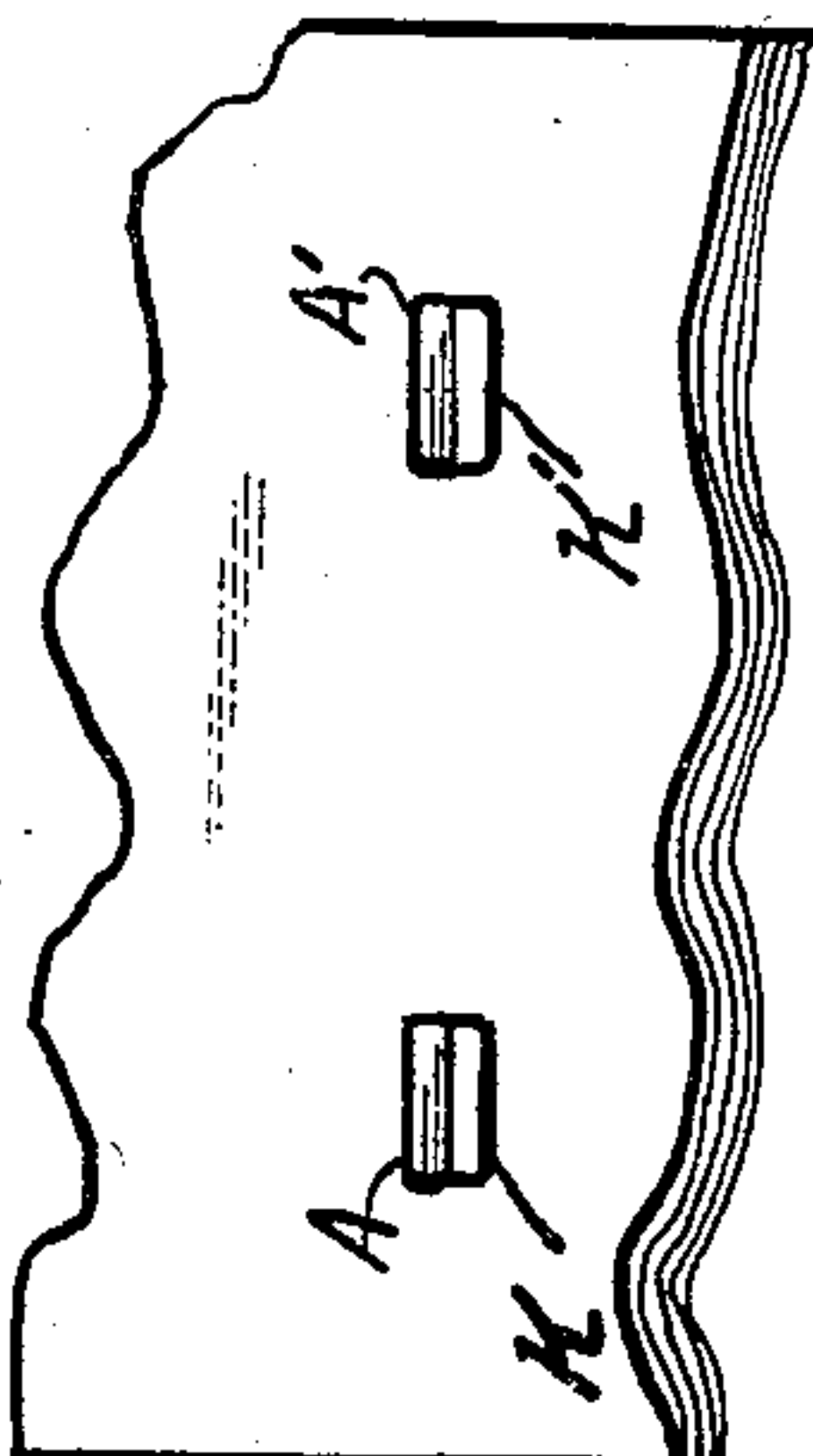


Fig. 1.

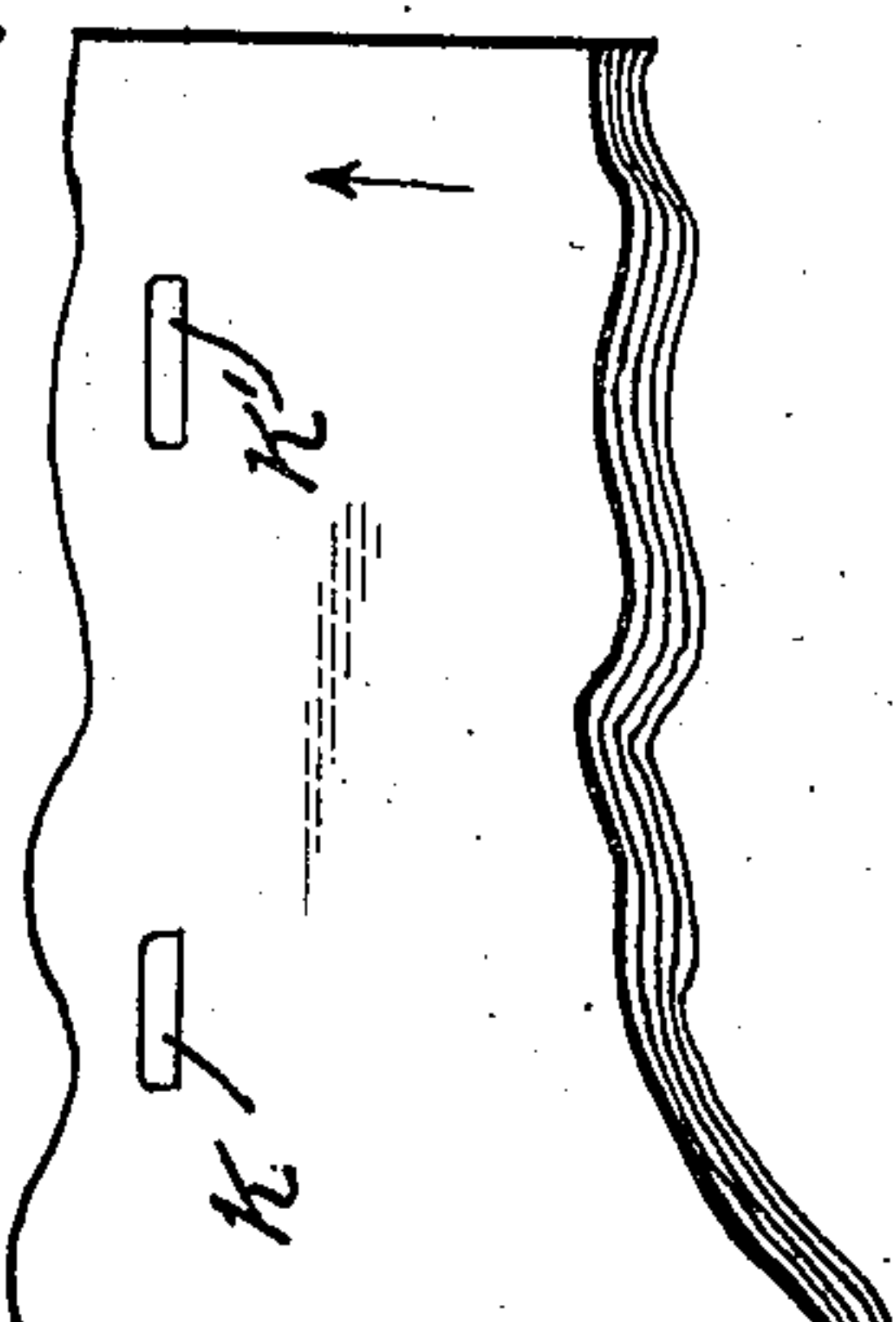


Fig. 7.

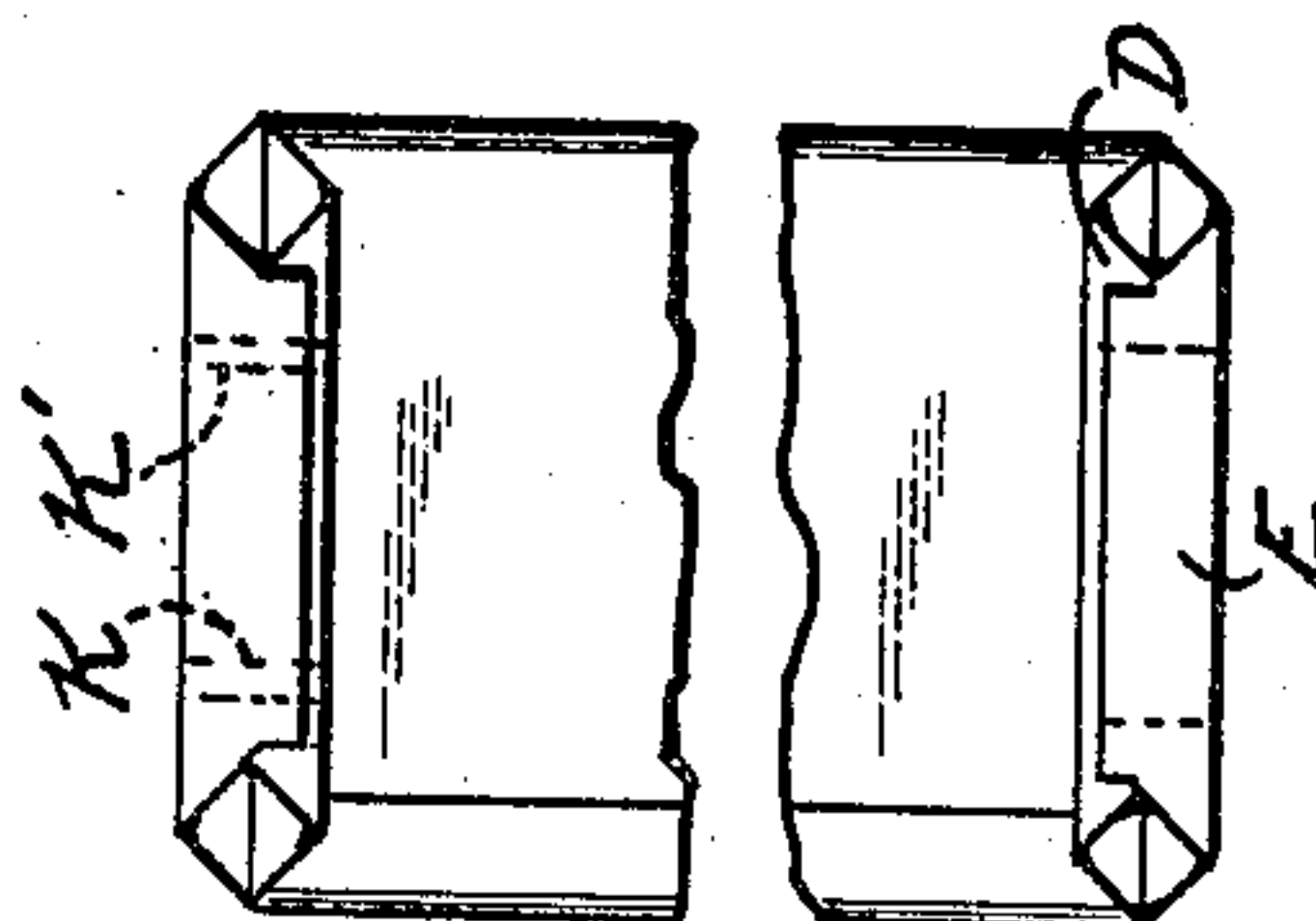


Fig. 6.

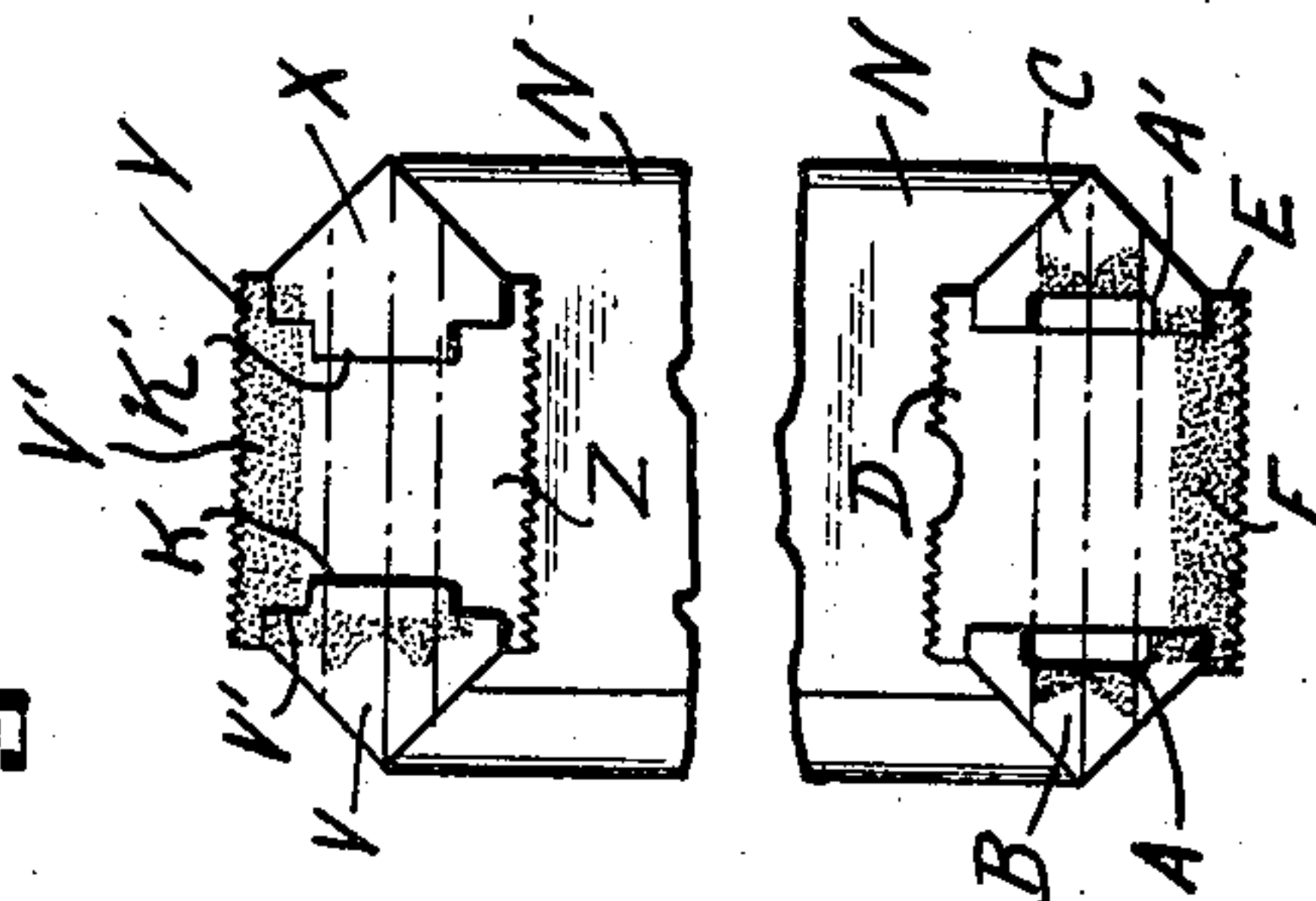


Fig. 5.

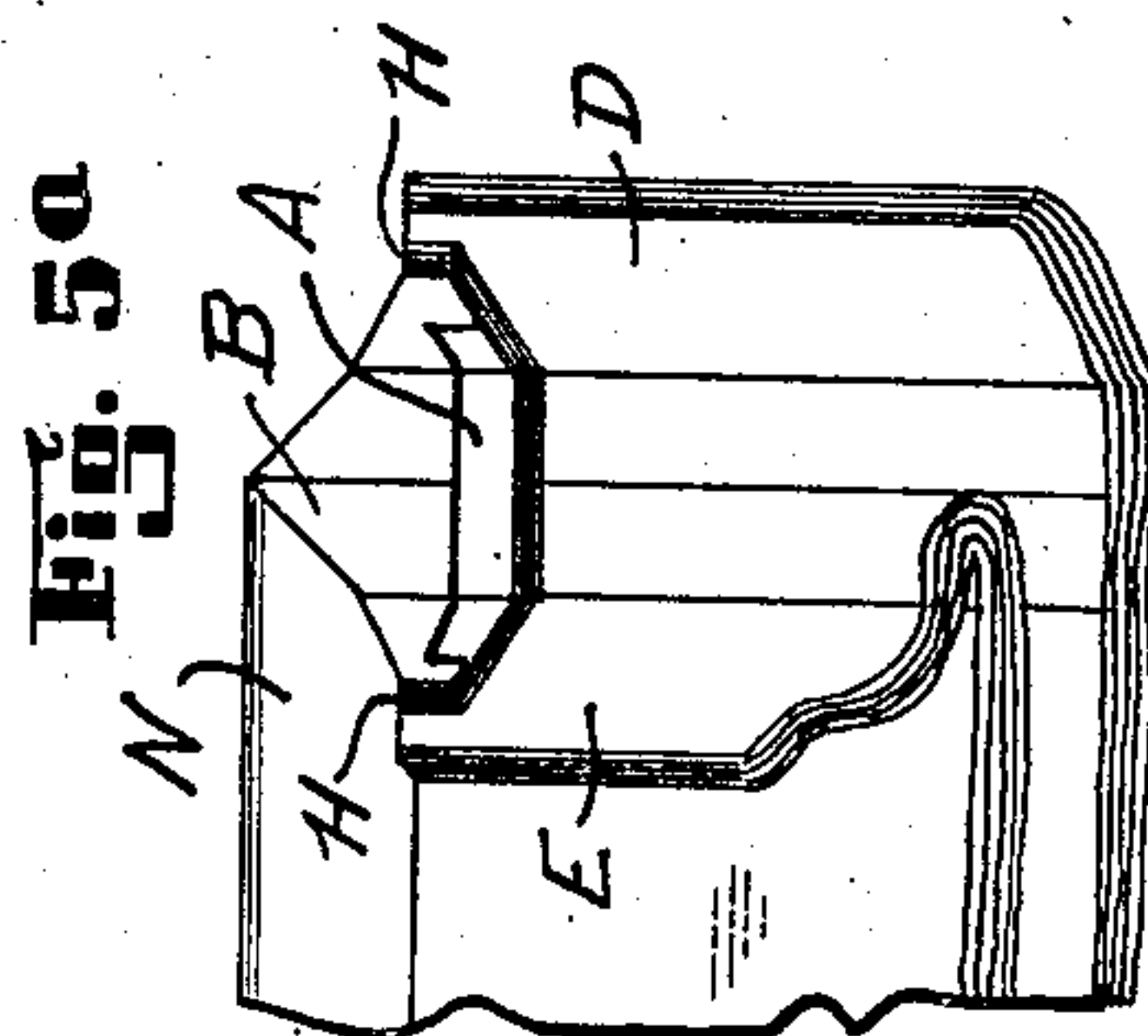
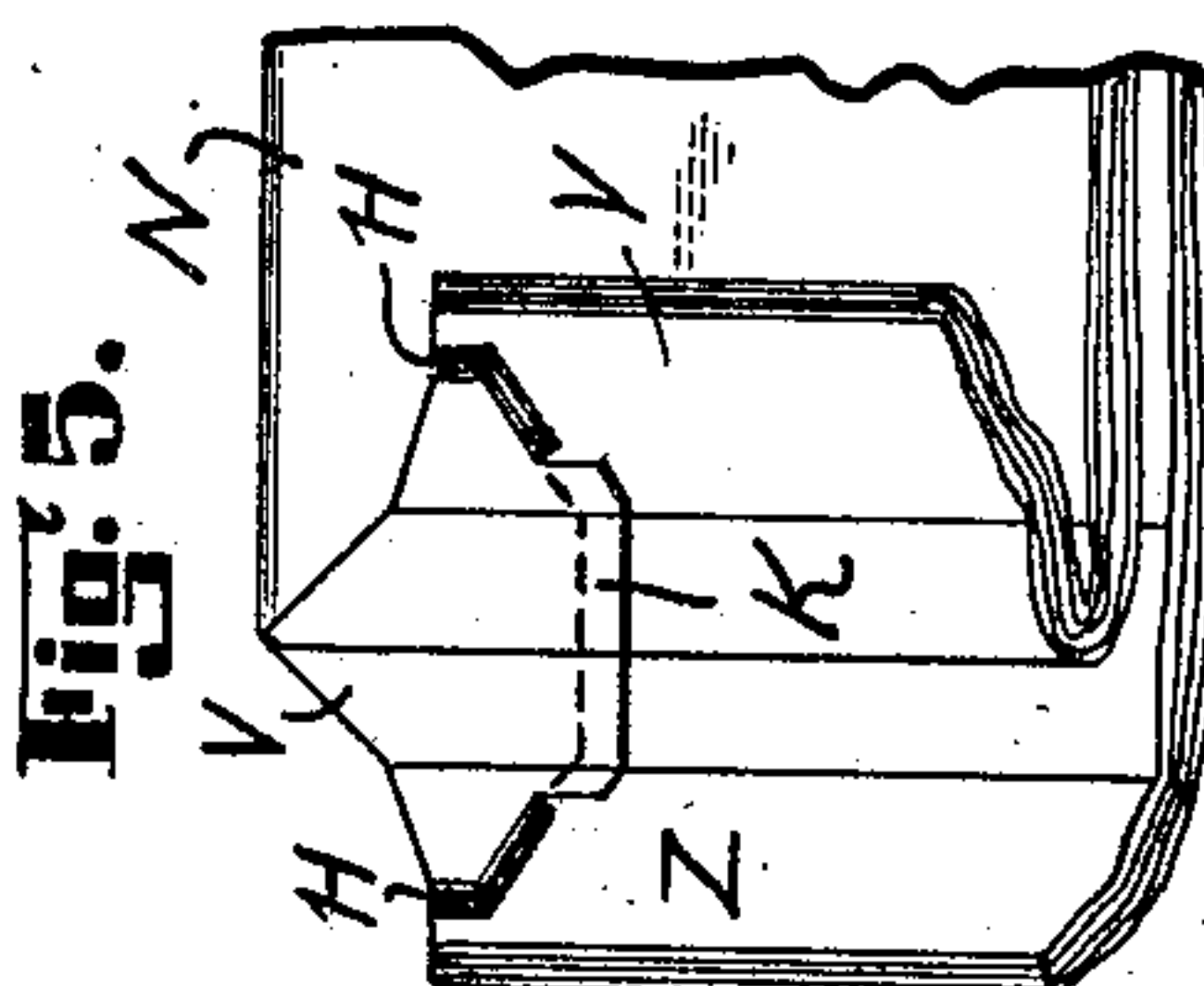


Fig. 5.



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## UNITED STATES PATENT OFFICE

2,346,292

## VALVE BAG

Thomas Earl Coty, deceased, late of Watertown, N. Y., by Hazel G. Coty, administratrix, Watertown, N. Y., assignor, by mesne assignments, to Coty Machine Corporation, Watertown, N. Y.

Application October 21, 1940, Serial No. 362,116

3 Claims. (Cl. 229—62.5)

The present invention relates to multiple ply paper bags of the so-called valve type.

In known forms of valve bags designed for heavy goods like cement, for example, several plies of very heavy paper are glued together, and cut in such a manner that portions thereof form a unitary valve flap adjacent to the valve opening. These composite flaps were intended to provide sealing or a more effective closure against leakage of contents from the sealed bag. However, the flap consisting of multiple connected plies makes a relatively thick and stiff closure which under some conditions affords inadequate sealing. Furthermore, in making bags with valve flaps of this type in commercial quantities, the material utilized for the flaps at the valve end of one bag is taken from the bottom or closed end of the next preceding bag, thus causing undesirable weakness in the closed end wall of each bag.

It has been one object of the invention to provide a bag blank and a bag made therefrom which have flap means at the valve end adapted and arranged to overcome these difficulties and to minimize others including the escape of powdered material from the valve end of the bag during the operation of filling through the valve opening thereof.

A further object has been to provide a valve bag blank and valve bag which may be produced in large volume at low cost and on bag making machines of well known and commonly used types requiring only relatively slight modification, if any, to turn out the improved blanks and bags. One such machine, for example, is the tuber described and shown in United States Patent No. 2,028,415 and another the bottomer described and shown in United States Patent No. 1,770,972.

One embodiment of the invention, as incorporated in a valve bag blank and in a valve bag, is shown in the accompanying drawing in which—

Figure 1 is a fragmentary view showing a portion of a web of assembled plies, the outer of which has been cut to form the flaps K and K';

Figure 2, a similar view showing said flaps turned back upon the outer ply;

Figure 3, a completed bag blank or length with said flaps turned back along edge creases thereof;

Figure 4, a view of a bag blank wherein end folds have been initiated and the flaps K and K' are ready to be extended into valve sealing position;

Figure 5, a fragmentary view showing in greater detail the flap K in extended relation to folds at the valve end;

Figure 5—A, a fragmentary view showing in greater detail a bottom end portion of the structure shown in Figure 5 with an edge portion of the top ply of an end fold thereof cut away;

Figure 6, a view of a bag blank wherein the end folds have been started and adhesive applied to portions thereof, with the flaps K and K' in operative or sealing position; and

Figure 7, a view of a completed bag.

A valve bag blank according to the invention as shown in the drawing comprises a plurality of plies of bag forming material, as paper, assembled in the shape of a flat tube N, Figure 3, with a longitudinally extending pasted seam. The outer ply, or other ply or plies less than all thereof, has at the valve end the flexible flaps K and K' which are hinged to an end edge portion of blank N and may be folded back therefrom. In the illustrated construction, K' is a valve sealing flap and K is an auxiliary flap positioned to retard the escape of material during filling. At the opposite or bottom end of blank N the outer ply is cut away as at A and A'; Figures 3, 4, 5—A, and 6; but the underlying plies are intact. Said cut-away portions of the outer ply of one blank N constitute the flexible flaps K and K' respectively of a contiguous blank N where said blanks are cut from a flattened tube.

The creases formed in flattening the tubular assembly of plies form the lateral edges of blank N and, in this form of blank, when the flaps K and K' are turned back, they occupy a position straddling said creased edges and overlying portions of the outer ply at either side thereof.

In making blanks, as N, from a web of plies, portions of the plies other than said flaps receive a coating of glue or other suitable adhesive, after which, said plies are assembled and folded into the form of an elongated flattened tube. This tube is cut into separate blanks N along predetermined transverse severance lines and is provided at its ends with slitter cuts H which define the width of the several inner and outer end folds. The valve flaps K, K' will extend beyond the ends of the assembled and glued multi-ply portions of the inner end folds; and the bag will be closed at its ends when the inner and outer end fold portions of the blank are folded to form the diamond fold closure at the bottom and valve ends of the completed bag.

Where the flaps K and K' of blank N have been

folded back, a further step in completing the bag is to fold in end portions of the blank and to bring said flaps to the extended closure position shown in Figure 6.

The completed valve bag includes at the valve end inner folds V and X and outer folds Y and Z, Figures 4 and 6, having portions of their several lateral edges defined by the slitter cuts H, Figures 3 and 4. The flaps K and K' consisting of one or more plies but less than all thereof, are more flexible than the assembled plies of said inner folds and extend inwardly toward each other from said respective inner folds V and X. Said flaps which are of less width than the inner folds as determined by the distance between said slitter cuts but wider than the bag opening, extend laterally across a portion of the valve opening defined by said several folds V, X, Y and Z and across portions of said outer folds Y and Z in position to be enfolded therewith in the complete closure. A portion of inner fold V is secured in its permanent closing position by a coating of adhesive V' and further by means of the superposed outer folds Y and Z which overlap each other, the outer fold Z being in part underneath the outer fold Y and secured thereto by a coating of adhesive Y'.

At its bottom end, the completed bag presents inner folds B and C and outer folds D and E. Said cut-away portions A and A' of the outer ply occur in said inner folds B and C respectively, Figures 4, 5—A, and 6. In completing the bottom as shown in Figure 7, outer fold D is brought down over the uncut ply or plies opposite cut-away portions A and A' in said inner folds B and C respectively; and the outermost fold E is secured to outer fold D by the adhesive indicated at F to provide an effective closure substantially unaffected by the absence therefrom of the material of the outer ply represented by the cut-out portions A and A'.

With the designated inner and outer folds of the valve end secured together in the manner described, an end opening or valve remains through which to introduce material such as cement or the like in a well known manner.

Where the construction includes the auxiliary flap K, extending from the inner fold V, it has been found that the amount of powdered material which escapes between fold V and outer folds Y and Z during filling is materially reduced as compared with the amount which escapes when said flap is omitted.

The valve flap K' opposite said auxiliary flap K, extends inwardly from inner fold X in such a manner that, when the bag is filled with cement or other powdered material, portions of said relatively free and flexible flap are thereby pressed to conform closely to adjacent undersurfaces of the outer folds Y and Z, thus effectively sealing the bag against undue leakage of the powdered material through the valve opening. In this respect this improved valve bag is superior to those wherein, for example, the composite flap is relatively stiff and therefore fails to operate under some conditions in a manner to effectively prevent leakage.

I prefer the form of the invention which uses both the flaps, as it limits the amount of dust, and is helpful because the operator must face the spout of the filler.

I also prefer the form of the invention in which only one ply is used for the formation of the flaps, but I do not exclude the use of more than

one; nor is the invention restricted to the outer ply, though that is simplest and is generally sufficient.

What is claimed is:

1. A valve bag comprising a multiple ply tubular body severed from a continuous tubular web and having cuts through its normal severance edge arranged and adapted to define the width of opposed outer end folds and opposed inner end folds, said opposed outer end folds being disposed across the bag opening in overlapping relation to each other and to portions of said inner end folds to form a diamond fold end closure, one of said inner end folds including an integral portion of a single ply thereof which projects beyond the normal severance edge of said inner fold to form a valve flap of less width than the inner end fold from which it projects, but wider than the bag opening, said valve flap being arranged with intermediate portions disposed across the bag opening and with its end portions folded in with portions of said opposed outer folds, and being in effect hinged substantially along the line of said severance edge and more flexible in all its parts beyond said edge than the inner fold from which it projects.

2. A valve bag comprising a multiple ply tubular body severed from a continuous tubular web and having cuts through its normal severance edge arranged and adapted to define the width of opposed outer end folds and opposed inner end folds, said opposed outer end folds being disposed across the bag opening in overlapping relation to each other and to portions of said inner end folds to form a diamond fold end closure, each of said opposed inner end folds at one end of said body including an integral portion of a single ply thereof which projects beyond the normal severance edges of said inner folds to form opposed valve flaps, each of less width than the inner end fold from which it projects but wider than the bag opening, each of said valve flaps being arranged with intermediate portions disposed across the bag opening and with its end portions folded in with portions of said opposed outer folds, and each of said valve flaps being in effect hinged substantially along the line of said severance edge and more flexible in all its parts beyond said edge than the inner fold from which it projects.

3. A valve bag comprising a multiple ply body severed from a continuous web and having cuts through its normal severance edge arranged and adapted to define the width of opposed outer end folds and opposed inner end folds, said opposed outer end folds being disposed across the bag opening in overlapping relation to each other and to portions of said inner end folds to form a diamond fold end closure, one of said inner end folds including an integral portion of a single ply thereof which projects beyond the normal severance edge of said inner fold to form a valve flap of less width than the inner end fold from which it projects, but wider than the bag opening, said valve flap being arranged with intermediate portions disposed across the bag opening and with its end portion folded in with portions of said opposed outer folds, and being in effect hinged substantially along the line of said severance edge and more flexible in all its parts beyond said edge than the inner fold from which it projects.

HAZEL G. COTY,

Administratrix of the Estate of Thomas Earl Coty, Deceased.